Cooperative State Planning And Research Program: Part II

OCTOBER 1999 - SEPTEMBER 2000: SPR- 0010(002)

TRANSPORTATION RESEARCH AND DEVELOPMENT BUREAU
NEW YORK STATE DEPARTMENT OF TRANSPORTATION

COOPERATIVE STATE PLANNING AND RESEARCH PROGRAM: PART II
OCTOBER 1999 - SEPTEMBER 2000: SPR-0010(002)

September 1999

TRANSPORTATION RESEARCH AND DEVELOPMENT BUREAU
New York State Department of Transportation
State Campus, Albany, New York 12232-0869

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NYSDOT
Library
50 Wolf Road, POD 34
Albany, New York 12232

TABLE 1A

SUMMARY OF COOPERATIVE STATE PLANNING AND RESEARCH PROGRAM: SPR-0010(002) PART II 10/99 - 9/2000

Project Number	Project Title & Research Supervisor	Annual Plan
10-01	Administration	300,000
10-02	Administration - Proj Selection/Prog. Development (Elrahman)	50,000
10-03	Administration - UTRC (Elrahman)	25,000
10-04	Administration - Consortium/Contract Research (Elrahman)	125,000
16-00	Training	25,000
	Subtotal	525,000
TECHNICAL ASSISTANCE AND TECHNOLOGY TRANSFER PROGRAM		
11-0	Information Exchange	150,000
11-01	Engineering Soils Survey (Walton)	5,000
11-02	Information Exchange - Library Operations (Webb)	100,000
11-03	Information Exchange - Newsletters (Elrahman)	10,000
11-04	Information Exchange - Library Support (Webb)	20,000
12-0	Consultation	160,000
12-22	FHWA/SHRP-LTPP (Yang)	75,000
12-38	Consultation - Statistics (Sandhu)	90,000
12-48	SHRP Superpave (Yang)	50,000
12-49	Falling Weight Deflectometer (Yang)	50,000
12-63	Const/Eval Noise Barrier With Recycled Plastic (Alampalli)	10,000
12-64	Develop Specifications Recycle Plastic For Hywy Application (Alampalli)	10,000
12-66	Quality Performance Mechanics For ITS Equipment Services (Elrahman)	25,000
13-0	Implementation	20,000
13-19	Implementation Shear-Key Performance Findings (Alampalli)	20,000
13-20	Implementation Composite Material for Bridge Rehabilition (Alampalli)	160,000
14-01	Local Technical Assistance Program (Valenti)	10,000
15-01	Engineering Computer Systems Support (Sandhu)	50,000
20-00	Contract Research (Valenti)	1,000,000
	Subtotal	2,015,000
EXPERIMENTATION PROGRAM: TYPE A CONTINUING STUDIES		
224-1	Development of an Overlay Design Procedure for NYS (Yang)	80,000
225-1	Hydr-Frac Test Apparatus & Proc Deter Aggregate Durability (Sandhu)	10,000
227-1	Compos Mat'ls Hy Bridge Const (Alampalli)	50,000
228-1	Post-Tensioning Steel Bridge Members (Alampalli)	10,000
	Subtotal	150,000
EXPERIMENTATION PROGRAM: TYPE B CONTINUING STUDIES		
	Subtotal	0
EXPERIMENTATION PROGRAM: PRE-PROJECT PLANNING		
	Subtotal	0
EXPERIMENTATION PROGRAM: PROJECTS NOT YET INITIATED/CONTINGENCIE		
	Projects Not Yet Initiated	0
	Consultations Not Yet Initiated	115,000
	Contingencies - Base Research **	6,221,000
	Subtotal	6,336,000
GRAND TOTAL SPR-0010(992) PART II FY 10/99-9/2000		9,026,000

** 5,465,000 Est Carry-in

TABLE 1B

FFY 2000
SPR PART II - FUNDING SUMMARY

SPR PART II	FEDERAL AID PROJECT NO.	80% FEDERAL	100% FEDERAL	PROGRAM TOTAL	Reimbursable TOTAL
RESEARCH PROGRAM *(See Table 1 for details)*	Q56-0010-992	**7,220,800**		**9,026,000**	**7,220,800**
FUNDED ACTIVITIES					
TRB GENERAL SUPPT	Q56-0010-976		225,000	225,000	225,000
NCHRP	Q56-0004-198		1,383,000	1,383,000	1,383,000
POOLED FUNDS	Various		1,500,000	1,500,000	1,500,000
LTAP	Q56-LTAP-992	300,000		300,000	240,000
ITS PROGRAM COOR	IVHS-02-993	118,000		118,000	94,400
TOTAL PART II		**7,638,800**	**3,108,000**	**12,552,000**	**10,663,200**

100% STATE FUNDED STATE ACTIVITIES *(See Section VII for details)*	STATE PROJECT NO.			TOTAL
ADMIN STATE FUND	R01001801			20,000
TOTAL 100% STATE				**20,000**

NOTE: CONTRACT RESEARCH

PROJECTS IN PROGRESS - FUNDED WITH PRIOR MONIES

CADD Expert Sys Blowing Snow Control	530,000
ITS Systems Benefits & Costs	201,200
Automating NYSDOT Data Collection	123,000
Managing Tort Liability	185,000
Finite Element Analysis of an FRP Composite	50,000
Encouraging Economic Growth - Transportation Strategies for MPOs	225,000
Maximizing Aggregate to Cement Ratio	275,000
	1,589,200

PLANNED PROJECTS

Severance Damage Studies to Commercial Properties	50,000
Evaluation of Best Practices to Control Storm Water Runoff	250,000
Warrants and Guidelines for Portable Signals	250,000
Improve Traffic Count-Based on VMT	250,000
	800,000

PREFACE

This work program is a statement of transportation research and development activities that qualify for reimbursement from Federal Cooperative State Planning and Research (SPR) funds. It describes work that will be performed during the program period -- October 1999 through September 2000. Projects completed during the last six months are listed in Section V, which also lists reports published in that period and Experimental Features that were evaluated in SPR projects. This section, along with the rest of the work program, serves as one of two semiannual reports on the research program.

Section VII lists all ongoing non-federally funded research projects. This section along with the rest of this publication presents the total research program.

Section I	Technical Assistance and Technology Transfer Program
Section II	Experimentation Program: Types A & B Continuing Studies
Section III	Proposed Projects Not Yet Initiated
Section IV	Administration/Training
Section V	Completed Projects
Section VI	100% State Funded Projects

All salary allocations included an estimated fringe-benefit factor of 34.85 percent (annual salary x .3485). The actual factor, to be established by the New York State Department of Audit and Control and Division of the Budget, represents the employer's share of workers compensation, hospitalization, retirement-fund charges, and other contributions.

Table 2A

PROJECTS NOT YET INITIATED: SPR-0010(002) Part II

ERTAP PROJECT NUMBER	TITLE	ERTAP CLASS*	ESTIMATED TOT PROJECT COSTS	ESTIMATED 1999-2000 PROJ COSTS
	ERTAP APPROVED SUMMER 1993			
93-052	Development of Improved Pavement Performance Prediction Model	1	120,000	0
97-021	Elastic Behavior of Steel Bridges	1	250,000	0
* Research project, applied			370,000	0

Table 2B

CONSULTATIONS NOT YET INITIATED: SPR-0010(002) Part II

ERTAP PROJECT NUMBER	TITLE	ESTIMATED TOTAL PROJ COSTS	ESTIMATED 1999-2000 PROJ COSTS
97-008	Assuring the Quality of Portland Cement Blended with Pozzolan	50,000	25,000
97-009	Full Penetration Groove Weld H-Pile Splice	50,000	10,000
97-010	Accelerated Curing Structural Concrete	50,000	25,000
97-011	Restoration of Public Confidence in Department Operations	20,000	20,000
97-026	Rumble Strips at Work Zone Lane Closures	40,000	25,000
97-030	Feasibility of Fireproofing of Bridges in Downstate New York	50,000	10,000
Note: Consultations listed in numeric rather than priority order.		260,000	115,000

TABLE 3
100% SPR POOLED-FUND PROJECTS: SPR-0010(002) PART II

TITLE OF STUDY		FUNDING COMMITMENT	FY 1999	FY 2000	FY 2001	FY 2002	Future
EXISTING NATIONAL STUDIES	**SPR-2**						
Performance Evaluation of Crumb Rubber Modified (CRM) Asphalt Pavements	(166)	$35,000	$5,000	$0	$0	$0	$0
Long Term Field Monitoring of Mitigating Corrosion Inhibitors	(184)	$30,000	$6,000	$6,000	$0	$0	$0
Roadside Safety Hardware Crash Tested to NCHRP Report 350	(187)	$20,000	$5,000	$0	$0	$0	$0
Support Maintenance and Refinement of the National Trans. Control/ITS Communications Protocol (NTCIP)	(189)	$25,000	$5,000	$5,000	$0	$0	$0
Durability of Geosynthetics - Phase II	(192)	$90,000	$90,000	$0	$0	$0	$0
Resistance of Drilled Shafts with Minor Defects	(195)	$100,000	$100,000	$0	$0	$0	$0
Bridge Fatigue Screening, Monitoring and Retrofitting Manual	(197)	$30,000	$10,000	$10,000	$0	$0	$0
Engineered Flowable Fill Bridge Approaches plus Abutment and Culvert Backfill using Inexpensive Recycled Materials	(198)	$12,000	$6,000	$0	$0	$0	$0
Optimal Acceptance Procedures for Statistical Construction Specifications	(199)	$20,000	$10,000	$0	$0	$0	$0
Compilation and Evaluation of Results from High Performance Concrete Bridge Projects	(200)	$17,500	$7,500	$0	$0	$0	$0
Truck/Pavement/Economic Modeling amd in-Situ Field Test Data Analysis	(203)	$100,000	$25,000	$25,000	$25,000	$25,000	$0
HITEC- Sign Reflectometers	(204 - a)	$25,000	$25,000	$0	$0	$0	$0
HITEC - Soil Stabilizers	(204 - b)	$17,500	$17,500	$0	$0	$0	$0
HITEC - Adaptive Traffic Control Systems	(204 - c)	$15,000	$15,000	$0	$0	$0	$0
HITEC - Alternative Material Dowel Bars/Pavement Joints	(204 - d)	$17,500	$17,500	$0	$0	$0	$0
HITEC - Storm Water Runoff Treatment Systems	(204 - e)	$45,000	$45,000	$0	$0	$0	$0
SUBTOTAL		$599,500	$389,500	$46,000	$25,000	$25,000	$0
EXISTING REGIONAL STUDIES	**SPR-3**						
Ice Force Measurements on the St. Regis River (continuation)	(021)	$80,000	$80,000	$0	$0	$0	$0
Development of Hydraulic Computer Models/Tidal scour III c	(022)	$30,000	$15,000	$0	$0	$0	$0
Rockfall Hazard Rating System	(032)	$50,000	$50,000	$0	$0	$0	$0

Aurora - Road Weather Information System	(042)	$75,000	$25,000	$25,000	$0	$0	$0
Urban Mobility Study a	(049)	$45,000	$15,000	$15,000	$0	$0	$0
Superpave Implementation Support - The Northeast Superpave Center	(056)	$189,948	$70,000	$70,000	$0	$0	$0
Geosynthetic Reinforcement of the Base Layer of Flexible Pavements	(065)	$75,000	$75,000	$0	$0	$0	$0
Treasure Island Liquification Testing Program	(067)	$50,000	$50,000	$0	$0	$0	$0
Internal Stability Design of MSE Walls	(072)	$90,000	$90,000	$0	$0	$0	$0
Animal-Vehicle Crash Mitigation Using Advanced Technologies	(076)	$75,000	$25,000	$25,000	$25,000	$0	$0
Wire Mesh and Cable Mesh Slope Protection	(077)	$50,000	$50,000	$0	$0	$0	$0
Reinstatement of Utility Cuts: An Innovative Solution to an old Problem	(080)	$300,000	$300,000	$0	$0	$0	$0
Evaluation of the PQI Device	(082)	$80,000	$80,000	$0	$0	$0	$0
SUBTOTAL		$1,189,948	$925,000	$135,000	$25,000	$0	$0
PROPOSED NATIONAL STUDIES							
Development of Portable Scour Monitoring Equipment	S-98-45	$10,000	$5,000	$0	$0	$0	$0
Traffic Management Center (TMC) Consortium	(?)	$150,000	$25,000	$25,000	$25,000	$25,000	$50,000
SUBTOTAL		$160,000	$30,000	$25,000	$25,000	$25,000	$50,000
PROPOSED REGIONAL STUDIES	**SPR-3**						
Column Wrapping for Confinement with FRP	(?)	$25,000	$25,000	$0	$0	$0	$0
Super Structure Strengthening with FRP	(?)	$25,000	$25,000	$0	$0	$0	$0
FRP Composite Prestressing Strands	(?)	$25,000	$25,000	$0	$0	$0	$0
Rolling Wheel Deflectometer	(?)	$20,000	$10,000	$10,000	$0	$0	$0
Response, Analysis and Design of Pile Foundations . . .	(?)	$25,000	$25,000	$0	$0	$0	$0
TTI Erosion Control Field Laboratory	(?)	$200,000	$50,000	$50,000	$50,000	$50,000	$0
Asphalt Pavement Damage Related to Tire Pressure	(?)	$100,000	$0	$50,000	$50,000	$0	$0
SUBTOTAL		$420,000	$160,000	$110,000	$100,000	$50,000	$0
TOTAL		$2,369,448	$1,504,500	$316,000	$175,000	$100,000	$50,000

FIGURE 1

TRANSPORTATION RESEARCH AND DEVELOPMENT BUREAU

MISSION: To manage a targeted transportation research and development program to enhance the equality and cost-effectiveness of transportation policies practice, procedures, standards, and specifications. Activities performed to accomplish this mission include applied research, technical assistance, technology transfer, and engineering and statistical

DIRECTOR'S OFFICE
457-5826
Robert A. Valenti, Acting Director
Nancy A. Troxell, Secretary I

STRUCTURES

Dr. Sreenivas Alampalli
Engineering Research Specialist II

Develops and verifies new structural design techniques and refines existing methods; provides technical consultation and assistance in the area of structures; evaluates load capacity of existing structures through physical testing and analysis; performs finite-element analysis.

Dr. Osman Hag-Elsafi, ERS I
George Schongar, CE I
Ryan Lund, CE I
Jonathan Kunin, CE1
Harry Greenberg, Lab. Equip. Designer

MATERIALS/PAVEMENTS

Dr. Wei-Shih Yang
Engineering Research Specialist II

Develops new and improved specifications for construction and maintenance materials; provides technical assistance in the areas of materials and pavements resulting in more economical pavements, improved service, Optimized performance, and extended service life; performs structural analysis of pavements.

Dr. Luis Julian Bendaña, ERS I
Cheng Chou, MS, ERS I
Rick Morgan, CE I
Tom Van Bramer, CE I

TECHNOLOGY TRANSFER/IMPLEMENTATION/ SPECIAL SERVICES

Dr. Deniz Sandhu
Engineering Research Specialist II

Develops and improves specifications and practices in areas other than structures and materials/pavements; provides technical assistance and consultation in various engineering subject areas; provides Department-wide statistical consultation; coordinates Bureau automation.

Ed Bikowitz, PET

ADMINISTRATION/MANAGEMENT SUPPORT

Dr. Ossama Abd Elrahman
Engineering Research Specialist I

Prepares annual Bureau budget and monitors expenditures; prepares Bureau publications (reports, newsletters, study proposals) and provides editorial support and consultation for other NYSDOT publications; manages research library and performs literature searches; manages all external research contracts; provides program liaison for such national research programs as NCHRP and pooled funds; develops Bureau operating policies and procedures

Colin Campbell, PRS II
Lynne M. Webb, CE I, Librarian
Linda Hotaling, Calculations Clerk II

SECTION I

Technical Assistance and Technology Transfer Program

11-0 INFORMATION EXCHANGE

As the title implies, this project covers activities providing for the transfer of technical information from one party to another. Other activities charged to this project include coordination of experimental feature work plans, support activities to the NCHRP Program, and coordination of pooled-fund projects. Work performed under this project during the program period includes the following:

1. Julian Bendaña attended the 7th Annual FWD User's Group Meeting in Seattle, Washington and was nominated the chairperson for the Year 2000 User's Group meeting.

2. Julian Bendaña prepared a presentation on concrete pavements for the New York State Association of Transportation Engineers Conference held October 22, 1998 at Pittsford, NY.

3. FHWA invited Deniz Sandhu to attend the "Eastern Winter Road Maintenance Symposium and Equipment Exposition" in State College, PA on September 9 and 10, 1998 to make a presentation on the progress of the FHWA Test & Evaluation Project on Thermal Mapping. Several follow-up actions and technology transfer activities are being pursued based on the information obtained and contacts made during this meeting. These include evaluations of alternative infrared pavement sensors for the collection of pavement temperatures and obtaining information from and disseminating information to a number of states and vendors who have interest or experience in thermal mapping. The Transportation Maintenance Division is particularly interested in the information on infrared sensors which are frequently being requested by Maintenance residencies to monitor pavement temperatures during snow and ice operations.

4. On October 16, 1998, Sreenivas Alampalli of TR&DB and Art Yannotti of Structures Division attended the opening ceremony of the Bennett's Creek FRP superstructure. This is the first FRP superstructure on a state highway; the first with more than 30-degree skew; and the first with integral barriers.

5. October 27-29, 1998, Osman Hag-Elsafi attended the Regional Structures Engineers meeting and the 5th Statewide Conference on Local Bridges in Syracuse, New York. During the meeting, he presented preliminary results of a survey on cracking of HP concrete decks. The results were prepared by Sreenivas Alampalli and Frank Owens.

6. Julian Bendaña attended the Association of Transportation Engineers' Annual meeting in Region 4. He made a presentation on PCC pavement design, "Past, Present and Future of PCC Design in NYS."

7. A call for papers was prepared for "Materials Technology: An NDT Conference," that will be co-sponsored by the Department and other states. Sreenivas Alampalli contacted the Society for Experimental Mechanics (SEM) for co-sponsoring the conference. SEM agreed to advertise the conference in their magazine, which has circulation in over 25 countries, and also on their web page. Nancy Troxell was responsible for preparing the call-for-papers and sending them to the professional community. FHWA has committed $50,000 for the conference.

8. A paper co-authored by Dr. Perry and Dr. Elrahman, "Guidelines for Night-Time Maintenance and Construction Operations was published in the September 1998 issue of Road & Transport Research.

9. Julian Bendaña attended the first National Symposium on 3D Finite Element Modeling of Pavement Analysis & Design, in Charleston, West Virginia, November 8-10, 1998.

10. Robert J. Perry, Robert Valenti, Sreenivas Alampalli, and Osman Hag-Elsafi met with Dr. Petru Petrina of Cornell University and Dr. Riyad S. Aboutaha of Syracuse University to discuss cooperation between the Bureau and their respective universities. Sreenivas Alampalli will be the contact person to facilitate future efforts.

11. Deniz Sandhu reviewed and offered comments on the progress report of NCHRP Project 20-46 "Systems Approach to Evaluating Innovations for Integration into Highway Practice." The contractor for the project, Worcester Polytechnic Institute, distributed a national survey on the criteria and factors used in evaluating innovations. The results of the survey and in-depth input from the panel members and Massachusetts DOT officials were obtained during a workshop in December in Worcester MA. The project panel meeting to evaluate the progress of the research was held in conjunction with the workshop.

12. On November 6, 1998, Dr. Dale P. Bent and Dr. Chiara Ferraris of National Institute for Standards and Testing (NIST) visited the Department and toured the Materials Bureau laboratories. This is the second visit by NIST staff to the Department to discuss venues for cooperation between the two organizations. During their visit, they met with Robert J. Perry, Sreenivas Alampalli, and Frank Owens of TR&DB, and held a separate meeting with staff members from the Materials Bureau. Sreenivas Alampalli will be the contact person for NIST to facilitate future cooperation.

13. The following papers, coauthored by structures section members, were submitted to the Materials Engineering Congress "Materials and Construction - Exploring the Connection", held in Cincinnati, OH in May:

    1. "FRPs for Bridge Construction and Rehabilitation in New York", by Sreenivas Alampalli, Arthur Yannotti, Jerome O'Connor, and Khuong Luu.

    2. "Performance of Class HP Concrete in Bridge Decks", by Sreenivas Alampalli and Frank Owens.

    3. "Strengthening an RC Cap Beam Using FRP Composites: A Case Study", Jerome O'Connor, Hector Hoyos, Arthur Yannotti, Sreenivas Alampalli, and Khuong Luu.

14. On February 8, 1999, Sreenivas Alampalli attended an awards ceremony sponsored by the Consulting Engineering Council of New York State. The FRP Column Wrap Demonstration Project in Region 6 won a Design Excellence Award, and will be entered in the American Consulting Engineering Council National Award Competition.

15. On February 16, 1999 Salem Faza of Marshall Industries gave a presentation on the company's composite rebar (C-Bar). The presentation was organized by Harry Greenberg and attended by staff members from the Research Bureau, Structures Division, and Materials Bureau. After the presentation, Sreenivas Alampalli sent technical information on the C-Bar to Jerry O'Connor and Ron Mauro of Region 6, who expressed their interest in using the technology on a demonstration project in the Region.

16. NYSDOT received a certificate from CERF (Civil Engineering Research Foundation) in recognition of our efforts in developing Ice Ban Deicing Product, winner of the 1998 CERF Charles Pankow Award for Innovation. Makbul Hossain has been serving HITEC as a member of the Ice Ban Evaluation Panel. This certificate was sent to Edward Fahrenkopf, Director Highway Maintenance Division for display.

17. Sreenivas Alampalli discussed technical cooperation between the Bureau and Dr. Carlos E. Ventura of the University of British Columbia in analyzing bridge testing data. The data was gathered and used for completion of a recent research project in the Bureau. Dr. Ventura expressed his interest in having the data further analyzed, under the Bureau's direction, by one of his graduate students.

18. Julian Bendaña reviewed and commented on the work plan for NCHRP Project 1-38 "Guide on Pavement Rehabilitation Strategies." The project of this study will be a guide on pavement rehabilitation strategies in a format appropriate for publication by AASHTO.

19. Paul Mack and Robert Perry hosted TR&DB's federally-mandated peer exchange. The panel was composed of research managers from Delaware and Rhode Island DOTs. Sam Elrahman represented TR&DB on the panel.

20. A paper coauthored by Sreenivas Alampalli, Jerome O'Connor, and Arthur Yannotti entitled, "High-Performance Composites" was submitted for publication in the ASCE Special Volume on "Advanced Composites for Cost-Effective Rehabilitation."

21. On May 10-12, 1999, Sreenivas Alampalli attended the ASCE Materials Congress "Materials and Construction: Exploring the Connection", in Cincinnati, OH. He moderated a session entitled "Concrete Performance and Production", and made two presentations entitled, "Fiber Reinforced Plastics for Bridge Construction and Rehabilitation in New York" and Performance of Class HP Concrete in Bridge Decks."

22. Wes Yang attended the AASHTO Joint Task Force on Pavement meeting in Baton Rouge, LA on May 19-21, 1999. Topics discussed at the meeting included the AASHTO 2002 Guide; Pavement 2000 Conference (to be held April 25-27, 2000 in Newport, RI); TRB LTPP Program; NCHRP; and FHWA reorganization and pavement-related research program. It was a very productive meeting.

23. Wes Yang and Julian Bendaña attended the FHWA LTPP North Atlantic Regional Meeting in Manchester, NH June 15-16, 1999. Wes made presentation on the NCHRP sponsored LTPP Data Analysis Projects and participated in a panel discussion on the future NCHRP LTPP Data Analysis Projects.

24. On June 15, 1999, Sreenivas Alampalli attended the 13th ASCE Engineering Mechanics Conference, which was held in Baltimore, MD, and made two presentations entitled "Advanced Composites for Bridge Rehabilitation" and "Design of Base Plates for Span-Wire Traffic Signal Structures."

25. Wes Yang attended NCHRP Project 20-50 (B) meeting in Washington, DC July 26-27, 1999 to evaluate two project proposals. Research agencies were selected for Project 20-50 (5) "Variation in Pavement Design Inputs", and Project 20-50 (7/12) "Daily and Seasonal Variations in Insitu Materials Properties."

26. Bob Valenti, Wes Yang and Deniz Sandhu attended the AASHTO Region 1 Research Advisory Committee Meeting in Harrisburg, PA, July 19-20, 1999. RAC members adopted a resolution encouraging AASHTO to seek congressional approval for funds supporting Superpave and LTPP activities.

27. Sam Elrahman participated in the 1999 Annual LTAP conference held July 25-28 in Roanoke, VA. The conference examined many different issues related to the LTAP program including peer exchanges, best practices, resources and program leveraging the T2 opportunities.

28. Wes Yang was named the Department's LTPP coordinator, and attended two LTPP meetings in Washington to discuss strategic planning and product development.

STATUS:	**ESTIMATED 1999-00 COSTS:**	**CLIENTS:**
Continuing	$150,000	All Department Units

TITLE	INFORMATION EXCHANGE
PIN	R01100881
Investigator	ALL SECTIONS
Client	VARIOUS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/99
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	209939	209939
Total Project	209939	209939

Programmed Expenditures

Original Budget	150000
Total Life	ANNUAL
FFY 1999	350000
FFY 2000	150000

Description

11-01 ENGINEERING SOILS SURVEY

This project, in conjunction with the Natural Resources Conservation Services (NRCS), provides field sampling assistance, laboratory analysis, and engineering interpretation of the soil types encountered in a surveyed county. Field sampling of soils will be conducted in the counties where NRCS is surveying. The laboratory analysis and interpretations for these soils is scheduled. Next year the field survey has been canceled by NRCS. However, funds will be needed to complete some existing laboratory work and investigate the NRCS computerization of the data.

STATUS:	**ESTIMATED 1999-00 COSTS:**	**CLIENTS:**
Continuing	$5,000	All Department Units

TITLE	ENGINEERING SOILS SURVEY
PIN	R01101881
Investigator	WALTON
Client	GEOTECH. ENGINEERING BUREAU
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	886	886
Total Project	886	886

Programmed Expenditures

Original Budget	5000
Total Life	ANNUAL
FFY 1999	5000
FFY 2000	5000

Description

11-02 INFORMATION EXCHANGE - Library Operations

This project covers activities performed by the Bureau's library staff which include accessing current technical information through the maintenance of a collection of technical literature and conducting inquiries to various technical information services, State universities and State libraries to obtain research source material. The following is a summary of some activities performed under this project during SFY 1998 - 99:

1.	Reference Questions	564
2.	Inter-Library Loans	276
•	New Acquisitions	1,158
•	Literature Searches	176
•	Circulation	796

NOTE: The Library was closed for a five-month period from December 1998 to April 1999.

STATUS:	ESTIMATED 1999-00 COSTS:	CLIENTS:
Continuing	$100,000	All Department Units

TITLE	INFO EX-LIBRARY OPERATIONS
PIN	R01102881
Investigator	WEBB
Client	ALL NYSDOT SECTIONS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	26384	26384
Total Project	26384	26384

Programmed Expenditures

Original Budget	100000
Total Life	ANNUAL
FFY 1999	100000
FFY 2000	100000

Description

11-03 INFORMATION EXCHANGE - Newsletters

The Transportation R&D News continues to serve as a forum for announcement of new publications and new research studies, with occasional feature articles concerning the research program, and is distributed throughout NYSDOT, to FHWA, and to other states. Four issues were published during this program period.

In addition, the TNT technology transfer newsletter continued quarterly publication and distribution to all NYSDOT employees who have engineering titles. Its contents cover a broad range of technological innovation throughout the transportation world, with the intent of encouraging readers to seek further information and possible application within New York.

Starting October, 1999 each newsletter will be published twice a year, alternating every quarter.

STATUS:	**ESTIMATED 1999-00 COSTS:**	**CLIENTS:**
Continuing	$10,000	All Department Units

TITLE	INFO EX - NEWSLETTERS
PIN	R01103881
Investigator	ELRAHMAN
Client	NYSDOT ENGINEERING UNITS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/1/3000
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	3657	3657
Total Project	3657	3657

Programmed Expenditures

Original Budget	10000
Total Life	ANNUAL
FFY 1999	15000
FFY 2000	10000

Description

11-04 INFORMATION EXCHANGE - Library Support

This project covers the acquisition of research resource material such as books, CD-ROMS, reports, periodicals, conference proceedings, etc. for the library.

STATUS:	ESTIMATED 1999-00 COSTS:	CLIENTS:
Continuing	$20,000	All Department Units

TITLE	INFO EX - LIBRARY SUPPORT
PIN	R01104881
Investigator	WEBB
Client	ALL NYSDOT UNITS
Contractor	

Date Project Initiated	10/1/97
Original Completion Date	9/30/98
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	5080	5080
Total Project	5080	5080

Programmed Expenditures

Original Budget	20000
Total Life	ANNUAL
FFY 1999	20000
FFY 2000	20000

Description

12-0 CONSULTATION

This project provides a means of rendering advice and/or services in various areas of engineering technology and research methodology, such as design of experiments, instrumentation, and statistical analysis, for which the Bureau staff is uniquely qualified or equipped. Some activities conducted under this project during the program period included:

1. Makbul Hossain performed analysis of MAGIC field logs obtained during the 1997-98 snow and ice control operations. The results were provided to the HITEC ICE BAN technical evaluation panel.

2. Deniz Sandhu reviewed and offered her comments on the contract and final work plan for FHWA pooled-funds study SPR-2(199), "Optimal Acceptance Standards for Statistical Construction Specifications." The contractor for the study is Clemson University. As the Department's representative on the project panel, Deniz is coordinating NYSDOT's response to a request from the contractor to obtain hot mix asphalt and cement concrete specifications.

3. Deniz Sandhu continued working with the technical selection committee to evaluate alternatives to herbicides under guiderails and around signs posts. The RFP was finalized and BAB will be advertising it shortly.

4. At the XVII International Modal Analysis Conference, Sreenivas Alampalli met with Dr. Titus of Romania, to discuss his future work at the Bureau on time-domain analysis of bridge vibration. Dr. Titus worked at the Bureau for one month from June to July, 1999.

5. As a member of the technical selection committee to evaluate alternatives to herbicides to control vegetation under guide rails and sign posts, Deniz Sandhu received 36 proposals submitted in response to the Department's request for proposals. The preliminary evaluation of the proposals was completed in March and follow-up information will be requested from submitters of promising alternatives. Deniz also had several meetings with representatives from the Transportation Maintenance Division, Environmental Analysis Bureau, Landscape Architecture Bureau, New York Coalition for Alternatives to Pesticides, New York Public Interest Research Group, and the Environmental Advocate. As a result of these meetings several alternatives were selected for field testing this year. Deniz consulted with Dr. Hunn of Cornell University and Dr. Abrahamson of Syracuse University and developed testing protocol for the selected alternatives. Work on this initiative is continuing.

6. Osman Hag-Elsafi and Jonathan Kunin reviewed reports on an elliptical precast concrete arch bridge (BEBO) and discussed their comments with Matthew Royce of the Structures Division. They also developed a spreadsheet program to check some of the results discussed in the reports. The program is based on analysis of a general pinned-pinned arch system subjected to live load, dead load due to own weight and soil, and an assumed soil pressure. At the request of the Structures Division, the

Geotechnical Engineering Bureau is now reviewing the assumptions used in estimating soil dead and solid pressure.

7. Deniz Sandhu completed the analysis of the data from acceptance testing done on joints from last year's pilot projects. The results and recommendations were presented to Peter Melas of the Region 1 Construction group and Cindy Brown of Callanan Industries (co-chairs of the task force on developing acceptance specifications for longitudinal joints in hot mix asphalt pavements) on February 25, 1999.

8. Osman Hag-Elsafi, Jonathan Kunin, George Schongar, and Harry Greenberg cooperated in developing two procedures to retrofit lower chord members of a truss bridge over Unidilla River in Region 9. The first method proposed post-tensioning and the second proposed the addition of steel channel sections to strengthen existing rusted members. Based on the proposed procedures, live load capacities of the retrofitted chord members could be improved to as-designed load levels. A summary of the proposed procedures is now being reviewed by the Structures Division and the Region.

9. At the request of the Construction and Maintenance Divisions, Rick Morgan examined and reported on the installation of temporary rumble strips in Columbia County, Region 8. Rick also met with personnel from GEB to discuss distress surveys of their pavement monitoring sites and began preparations to begin surveys. Rick also performed two follow-up examinations of the temporary rumble strip installation on Route 9H, and he also observed the installation of temporary rumble strips on Route 78 in Erie County, Region 5 and performed a follow-up examination.

10. Julian Bendana met with Bonnie Premo and Gayle Burgess of State and Local Governmental Relations to discuss truck weight and axle configuration for comparison of pavement damage.

STATUS:	**ESTIMATED 1999-00 COSTS:**	**CLIENTS:**
Continuing	$160,000	All Department Units

TITLE	CONSULTATION
PIN	R01200881
Investigator	ALL SECTIONS
Client	VARIOUS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/1/3000
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	286705	286705
Total Project	286705	286705

Programmed Expenditures

Original Budget	160000
Total Life	ANNUAL
FFY 1999	400000
FFY 2000	160000

Description

TITLE	FHWA-LTPP
PIN	R01222881
Investigator	DR. YANG
Client	FHWA
Contractor	

Date Project Initiated	7/7/88
Original Completion Date	3/31/93
Revised Completion Date	9/30/03
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	38773	268778
Total Project	38773	268778

Programmed Expenditures

Original Budget	75000
Total Life	789000
FFY 1999	75000
FFY 2000	75000

Description

OBJECTIVE: To provide the staffing, expertise, and all necessary technical assistance for FHWA-LTPP related activities (e.g., GPS/SPS, Seasonal Monitoring Program and WIM, etc.) In New York State.

PROGRESS: Normal duties were performed (arranging traffic control, maintaining files, answering correspondence, etc. All sites were re-marked and striped. Cores were taken from GPS site 361011 on I481, Syracuse, Onondaga Co. Region 3.

SIX-MONTH PLAN: Continue to coordinate activities between the Department and FHWA's contractor. Transmit inventory data on all GPS and the SPS-8 sections to FHWA's contractor as it becomes available. Arrange testing of cores from I481 by Materials Bureau.

TITLE	RDC CONSULTATION
PIN	R01228881
Investigator	ALL SECTIONS
Client	N/A
Contractor	

Date Project Initiated	10/1/98
Original Completion Date	9/30/99
Revised Completion Date	9/30/99
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	30000
Total Life	ANNUAL
FFY 1999	30000
FFY 2000	

Description Project closed. Activities assumed by other projects.

12-38 CONSULTATION - Statistics

This project covers statistical services provided by the Bureau's statistician to various clients throughout the Department. Some of the analyses provided during the program period include:

1. On October 5, 1998, Bob Valenti and Deniz Sandhu met with the members of the task force to shorten the consultant designation process. Based on the analysis of historical data the task force provided prior to the meeting, Deniz recommended a statistically based method to short-list the proposers. At a follow-up to the meeting on October 6, Deniz provided them with a flow chart to implement this statistical procedure in their computer programs.

2. Deniz Sandhu and Peter Bajorski completed the draft report on the statistical analyses of the friction data from sites containing blends of Wappinger dolomite and non-carbonate aggregates. The findings of the report were discussed with the clients during a meeting on November 23, 1998.

3. Peter Bajorski completed the analysis of the metal thickness data and developed a stochastic model for metal loss which takes into account censoring due to perforated culverts. Specific calculations of metal loss as a function of time were included in the written report provided to Michael Mathioudakis. Michael will be incorporating these results into the final report for the project.

4. Peter Bajorski received the preliminary data obtained from Phase II of experimental mixes of high-performance concrete. These will be compared with the results from Phase I of the study.

5. Deniz Sandhu worked with Ed Denehy of the Transportation Maintenance Division (TMD) and Larry Mulvaney of the Data Services Bureau in implementing the sampling plan developed for the TMD Quality Assurance Program. In addition to the sample of 600 miles of highway to be inspected by the residencies, sub-samples to be re-inspected by the Regional and Main Office personnel were also developed. Ryan Lund developed a data entry program and a database for the analysis of the data that will be generated from this program.

6. On July 1, 1999, Deniz Sandhu met with representatives from the Materials Bureau to discuss the final recommendations on testing high strength concrete using neoprene capped cylinders. The results of the statistical analyses and the recommendations were subsequently reported to the clients in a memo.

7. Deniz Sandhu provided statistical analyses and interpretation of the data comparing test results for asphalt binders collected in metal and cardboard containers for Chris Euler of the Materials Bureau.

8. Deniz Sandhu had several meetings with Charley Stone of Construction to determine the set-up and data collection requirements for a study that would compare various strategies to slow down traffic in work zones. The experimental design for a pilot study was developed. Two sites one in Region 9, one in Region 6, were selected for a pilot study that will take place this September.

STATUS:	ESTIMATED 1999–00 COSTS:	CLIENTS:
Continuing	$90,000	All Department Units

TITLE	CONSULTATION (STATISTICS)
PIN	R01238881
Investigator	DR.SANDHU
Client	ALL NYSDOT UNITS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	77521	77521
Total Project	77521	77521

Programmed Expenditures

Original Budget	90000
Total Life	ANNUAL
FFY 1999	120000
FFY 2000	90000

Description

TITLE	SHRP SUPERPAVE
PIN	R01248881
Investigator	DR. YANG
Client	MATERIALS BUREAU
Contractor	

Date Project Initiated	7/18/94
Original Completion Date	9/30/99
Revised Completion Date	9/30/04
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	52475	292908
Total Project	52475	292908

Programmed Expenditures

Original Budget	250000
Total Life	500000
FFY 1999	50000
FFY 2000	50000

Description

OBJECTIVE: To provide the staffing, the expertise and the necessary technical assistance to coordinate such Superpave-related activities as Operational Goal #94-5, testing and mix design plans, and QA/QC Program, etc.

PROGRESS: 1999 Field Survey is in progress. Client report is underway.

SIX-MONTH PLAN: Complete 1999 Field Survey and FWD testing, and continue with work on client report.

TITLE	FALLING WEIGHT DEFLECTOMETER
PIN	R01249881
Investigator	DR. YANG
Client	GEO. TECH. ENG. BUR.
Contractor	

Date Project Initiated	9/30/94
Original Completion Date	9/30/97
Revised Completion Date	9/30/00
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	22774	243141
Total Project	22774	243141

Programmed Expenditures

Original Budget	150000
Total Life	370000
FFY 1999	50000
FFY 2000	50000

Description

OBJECTIVE: To provide the staffing, expertise, and all necessary technical assistance to coordinate the following FWD-related activities:

1. Perform FWD testing to support Project R-224-01, "Development of Overlay Design Procedure."
2. Perform FWD testing to evaluate field performance of superpave jobs, Project R-012-48."

PROGRESS: Performed FWD analysis from several FWD jobs to determine layer modulus.

SIX-MONTH PLAN: Continue FWD analysis and collect 2000 field data.

TITLE	LOSS OF ENTRAINED AIR HRD CONCRETE
PIN	R01257881
Investigator	CHOU
Client	MATERIALS BUREAU
Contractor	

Date Project Initiated	5/19/95
Original Completion Date	9/30/97
Revised Completion Date	9/30/99
Revision number	2

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	24888	179598
Total Project	24888	179598

Programmed Expenditures

Original Budget	50000
Total Life	150000
FFY 1999	60000
FFY 2000	

Description

OBJECTIVE: To develop a user-friendly manual to assist concrete mix designers and concrete manufacturers in evaluating, screening and selecting effective and efficient air entraining agents in the present U.S. market, and in determining under what conditions prescribed air content and spacing factors are lost in hardened concrete (water/cement ratio, aggregate, vibration, mix action, admixtures, slump, temperature, etc.) and how the problems can be avoided or solved.

PROGRESS: (1) The Chemical Laboratory is continuing their evaluation of report, "Proposed Laboratory Test Method for Preliminary Evaluating, Screening, and Preliminary Selecting Air Entrain Agents." (2) Continued work on the draft of the final report.

SIX-MONTH PLAN:Project completed. Title: LOSS OF ENTRAINED AIR HRD CONCRETE - AUG. 16, 1999

TITLE	FLD INVEST SVS LIFE CORR STEEL CULV
PIN	R01260881
Investigator	DR. SANDHU
Client	DESIGN DIVISION
Contractor	

Date Project Initiated	3/13/96
Original Completion Date	8/1/96
Revised Completion Date	9/30/99
Revision number	5

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	11762	11762
Total Project	11762	11762

Programmed Expenditures

Original Budget	35000
Total Life	65000
FFY 1999	10000
FFY 2000	

Description

OBJECTIVE: The goal of this study is to verify the assumptions made for metal loss rates in the design of corrugated steel culverts. A large sample of the culverts included in the original study was located and visited to measure remaining metal thickness and observe their field performance. The study concentrated on Zone 2 culverts since the statistical analysis suggested a larger discrepancy in the metal-loss rates for this geographical area.

PROGRESS: Report completed.

SIX-MONTH PLAN: Project closed.

TITLE	CONST/EVAL NOISE BARRIER W/RECYCLED
PIN	R01263881
Investigator	DR. HAG-ELSAFI
Client	VARIOUS
Contractor	

Date Project Initiated	10/17/96
Original Completion Date	3/31/98
Revised Completion Date	3/31/00
Revision number	2

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	1177	10363
Total Project	1177	10363

Programmed Expenditures

Original Budget	50000
Total Life	50000
FFY 1999	15000
FFY 2000	10000

Description

OBJECTIVE: 1) Construct and monitor a noise wall at a selected Long Island site, recording viable construction techniques and costs, evaluating acoustic effectiveness, and assessing public acceptance; 2) monitor most important recycled plastic material properties for changes due to exposure to field consitions; and 3) evaluate the testing experience, and modify the proposed standards and specifications in Project 12-44 as appropriate.

PROGRESS: Construction of the noise wall will be completed by December 1999.

SIX-MONTH OBJECTIVE: Monitor the wall during and after construction. Conduct accoustic testing before and after construction.

TITLE	DEV SPECS RECYCLED PLASTIC HY APP
PIN	R01264881
Investigator	DR. HAG-ELSAFI
Client	EAB, DQAB, MATERIALS, STRUCTURES
Contractor	

Date Project Initiated	4/24/97
Original Completion Date	6/30/98
Revised Completion Date	6/30/00
Revision number	2

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	1646	2159
Total Project	1646	2159

Programmed Expenditures

Original Budget	50000
Total Life	50000
FFY 1999	25000
FFY 2000	10000

Description

OBJECTIVE: Identify potential highway applications for recycled plastics and develop specifications for materials to be used in those applications. This objective can be accomplished in two phases: 1) identification of potential highway applications, and 2) depending on the findings, development of additional specifications.

PROGRESS: Project initiated April 1997. Completed literature search and prepared a draft report for Phase I. No progress during last six months due to lack of personnel.

SIX-MONTH PLANS: Modify the report for review by the client and then continue to Phase II. Prepare a draft report for the client's review,if resources permit.

TITLE	NDT METH EST PAV LAYER THICKNESS
PIN	R01265881
Investigator	N/A
Client	GEO. TECH. ENG. BUR.
Contractor	

Date Project Initiated	5/19/97
Original Completion Date	9/30/99
Revised Completion Date	9/30/99
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	13262	43484
Total Project	13262	43484

Programmed Expenditures

Original Budget	40000
Total Life	40000
FFY 1999	15000
FFY 2000	

Description

OBJECTIVE: (1) Transfer a main-frame-based SASW Fortran program to a PC-based program, and (2) Perform SASW testing to determine pavement layer thickness.

PROGRESS: Methods have been developed to determine pavement surface layer moisture and have been implemented by the Geotechnical Engineering Bureau.

SIX-MONTH-PLAN: Project terminated. Responsibility transferred to Geotechnical Engineering Bureau.

TITLE	QTLY PERF MECH ITS EQUIP & SVS
PIN	R01266881
Investigator	DR. ELRAHMAN
Client	TRAFFIC ENG & HIGH. SAFETY DIV.
Contractor	

Date Project Initiated	5/20/97
Original Completion Date	6/30/98
Revised Completion Date	6/1/00
Revision number	2

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	553
Total Project	0	553

Programmed Expenditures

Original Budget	45000
Total Life	45000
FFY 1999	25000
FFY 2000	25000

Description

OBJECTIVE: The goals are to explore methods of improving the ITS procurement process, to ensure that quality and performance factors are properly addressed in contracting procedures. The objectives are to: 1) examine past/existing Department ITS procurement, and contracting mechanisms; 2) gather information on national efforts to improve ITS contracting processes; and 3) recommend specific improvements for NYSDOT ITS procurement.

PROGRESS: Literature review and survey of NYSDOT and national contracting procedures are completed. ITS provisions in TEA-21 were analyzed.

SIX-MONTH-PLAN: Continue to analyze Department ITS procurement mechanisms and identify shortcomings of existing contracting for ITS services and develop contracting methods that may prove successful in adding quality to ITS contracting.

TITLE	PEER REVIEW
PIN	R01267881
Investigator	DR. PERRY
Client	FHWA
Contractor	

Date Project Initiated	9/3/97
Original Completion Date	10/1/98
Revised Completion Date	10/1/98
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	10000
Total Life	10000
FFY 1999	0
FFY 2000	

Description OBJECTIVE: TO COMPLY WITH FHWA RULES AND REGULATIONS: 23CRF PART 420.207(b).

Peer Review completed 6/99. No charges allocated to this project. Project terminated.

12-68 GEOTECHNICAL ENGINEERING CONSULTATION

To provide on-going technical assistance and technology transfer to the Geotechnical Engineering Bureau.

STATUS:	ESTIMATED 1999–00 COSTS:	CLIENTS:
Continuing	$0	Geotechnical Engineering Bureau

TITLE	GEOTECH ENGINEERING CONSULTATION
PIN	R01268881
Investigator	DR. SANDHU
Client	GEOTECH. ENG. BUR.
Contractor	

Date Project Initiated	10/1/98
Original Completion Date	9/30/99
Revised Completion Date	9/30/99
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	6555	6555
Total Project	6555	6555

Programmed Expenditures

Original Budget	30000
Total Life	ANNUAL
FFY 1999	30000
FFY 2000	0

Description Project closed; no available staff.

13-0 IMPLEMENTATION

Activities conducted under this project are directed at cooperating with Department staff in implementing the results of research conducted by the Bureau and other agencies. In the case of in-house research, this project permits "implementation follow-through" after the research projects are completed and terminated.

Activities will be undertaken primarily by Bureau staff and members of appropriate Department Technical Working Groups who will provide guidance on packaging, planning, promotion, and delivery strategies needed to assess new technologies or products. Bureau staff are available to assist end-users on both the evaluation and initiation of these new products and technologies, and provide a feedback loop for positive communication of findings.

1. Julian Bendana in conducting Mechanistic-Empirical analysis to update Table 1 of the "Thickness Design Manual for New and Reconstructed Pavements."

2. Osman Hag-Elsafi discussed with Bill McColl, Environmental Analysis Bureau, a plan to measure before- and after-construction noise levels at the barrier site in Long Island, for assessment of acoustic effectiveness of the barrier in blocking traffic noise.

3. Julian Bendana continued working on various design and construction issues on Route 9A construction.

4. Frank Owens and Sreenivas Alampalli completed a draft report entitled, "In-Service Performance of HP Concrete Decks," summarizing HP concrete deck survey responses. Copies of the report were forwarded to the clients for their review.

5. Sreenivas Alampalli, Osman Hag-Elsafi, and Frank Owens met with Larry Johanson and Bob Holt of the Structures Division, and Larry Brown, Rich Stempel, and Rich Marriott of DQAB to discuss a draft report on a proposed procedure for design of end- and base-plates of cantilevered traffic signal structures. Osman and Frank gave a presentation on the procedure and a demonstration of its spreadsheet implementation.

6. Julian Bendana met with Bill Snyder of Materials Bureau to finalize tie-bar design tables with PCC tied-shoulder and AC shoulders that will be used in the new standards using the latest changes in the ACI code. The new tables are for Grade 60 steel and 19 mm bars.

7. Frank Owens and Sreenivas Alampalli completed a draft report entitled "In-Service Performance of HP Concrete Decks." The draft incorporates client comments, and is expected to be published by the end of next month.

8. Structures staff met with the Structures Division on August 16, 1999 to discuss implementation of Reactive Powder Concrete by HDR, Inc. It was felt that this technology has a promise for future DOT projects and thus decided to be an observing partner of HDR projects utilizing Reactive Powder Concrete to gain a better understanding of the product.

STATUS:	**ESTIMATED 1999-00 COSTS:**	**CLIENTS:**
Continuing	$20,000	All Department Units

TITLE	IMPLEMENTATION
PIN	R01300881
Investigator	ALL SECTIONS
Client	VARIOUS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	3576	3576
Total Project	3576	3576

Programmed Expenditures

Original Budget	20000
Total Life	ANNUAL
FFY 1999	20000
FFY 2000	20000

Description

TITLE	IMPL SHEAR-KEY PERF PROJ FINDINGS
PIN	R01319881
Investigator	DR. ALAMPALLI
Client	STRUCTURES DIVISION
Contractor	

Date Project Initiated	5/7/97
Original Completion Date	12/31/98
Revised Completion Date	12/31/00
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	14330	27764
Total Project	14330	27764

Programmed Expenditures

Original Budget	45000
Total Life	45000
FFY 1999	20000
FFY 2000	20000

Description

OBJECTIVE: To investigate the effect of increased deck-overlay reinforcement and greater transverse post-tensioning force in reducing shear-key related longitudinal deck cracking on adjacent-prestressed-beam bridges.

PROGRESS: All the test structures were identified for implementing the recommendations. Three structures were constructed this year and others scheduled for next construction cycle.

SIX-MONTH PLAN: Monitor the test structures for cost, constructability and serviceability issues associated with recommended changes.

13-20 IMPLEMENTATION OF COMPOSITE MATERIALS FOR BRIDGE REHABILITATION

This project provides assistance to Structures Division and the regions in evaluating composite materials for structural applications, instrumenting and monitoring demonstration projects as needed, and developing guidelines for future application of these products by the Department.

STATUS:	ESTIMATED 1999-00 COSTS:	CLIENTS:
Continuing	$160,000	Structures Division and Regions

TITLE	IMPL COMPOSITE MAT'LS FOR BR REHAB
PIN	R01320881
Investigator	DR. ALAMPALLI
Client	STRUCTURES DIVISION AND REGIONS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	51130	51130
Total Project	51130	51130

Programmed Expenditures

Original Budget	75000
Total Life	ANNUAL
FFY 1999	150000
FFY 2000	160000

Description

14-01 LOCAL TECHNOLOGY ASSISTANCE PROGRAM

Cornell University, sponsored by the Department of Transportation and FHWA, has been contracted to provide training and technology transfer to local municipal highway personnel. These services are provided through formal instructional classes, direct mailings, conferences, and phone calls.

Activities conducted under this project during the program year included:

1. Cornell published its annual report highlighting its CY 1998 accomplishments. This report was reviewed by Transportation Research and forwarded to FHWA.

2. Transportation Research recommended and FHWA approved the 1999 work plan for LTAP.

3. In October, 1998, Robert Valenti attended the LTAP Planning Committee Meeting in Albany, New York. During this meeting, the agenda for the June, 1999 Annual Highway School was determined.

4. Cornell held its annual Highway Superintendents School on June 7-9, 1999 at Ithaca College, Ithaca, NY. Bob Valenti attended the planning committee meeting held immediately following the school.

5. Sam Elrahman attended the 1999 National LTAP Conference in July in Roanoke, Virginia. Strategic planning was the major theme of the conference.

STATUS:	ESTIMATED 1999–00 COSTS:	CLIENTS: Municipal highway officials in all local jurisdictions.
Continuing	$10,000	

TITLE	LOCAL TECHNICAL ASSISTANCE PROGRAM
PIN	R01401881
Investigator	VALENTI
Client	LOCAL HIGHWAY AGENCIES
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	6640	6640
Total Project	6640	6640

Programmed Expenditures

Original Budget	10000
Total Life	ANNUAL
FFY 1999	10000
FFY 2000	10000

Description

OBJECTIVE: Provide technical engineering services to local municipal highway personnel through contractual agreement with Cornell University.

PROGRESS: 1999 Annual Highway School conducted.

SIX-MONTH PLAN: Provide Technology Transfer activities as necessary. Plan 2000 School. Secure full funding for 1999 Work Plan.

15-01 ENGINEERING COMPUTER SYSTEMS SUPPORT

This project covers all activities performed by the Bureau's Senior Computer Coordinator, including planning, management, and maintenance of the hardware and software for the Bureau's computer network and personal computers. This function also includes software development and programming for Engineering Research projects and consultations.

Activities conducted under this project during the program year include:

1. Two color printers were added to the Bureau's network.
2. A new NT Workstation was added to the Structures section.
3. All Bureau PC's were upgraded to Pentium class machines.
4. Bureau's network services were migrated to the Geotechnical Engineering Bureau servers.
5. All PC's were upgraded to Windows 95 or 98 operating systems.

STATUS:	**ESTIMATED 1999–00 COSTS:**	**CLIENTS:**
Continuing	$50,000	All Bureau Sections

TITLE	ENGINEERING COMPUTER SYS SUPPORT
PIN	R01501881
Investigator	DR. SANDHU
Client	ALL BUREAU SECTIONS
Contractor	

Date Project Initiated	10/1/998
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	41192	41192
Total Project	41192	41192

Programmed Expenditures

Original Budget	50000
Total Life	ANNUAL
FFY 1999	75000
FFY 2000	50000

Description

TITLE	CONTRACT RESEARCH
PIN	R02000881
Investigator	ELRAHMAN
Client	ALL NYSDOT UNITS
Contractor	

Date Project Initiated	10/1/93
Original Completion Date	9/30/98
Revised Completion Date	9/30/98
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	1000000
Total Life	ANNUAL
FFY 1999	1000000
FFY 2000	1000000

Description

OBJECTIVE: To conduct a program of contract research to address Department research needs which cannot be handled by the Transportation Research and Development Bureau.

PROGRESS: One project, Economic Impacts of Transportation Investment, was completed. A no-cost time extension was processed to allow completion of on-going TIRC projects which were not finalized prior to expiration of the TIRC agreement. The following projects are underway:

1. CADD Expert System for Blowing Snow Control ($530,000)
2. ITS Systems- Benefits and Costs ($201,200)
3. Automating NYSDOT Data Collection ($123,000)
4. Finite Element Analysis of an FRP Composite ($50,000)
5. Managing TORT Liability ($185,000)
6 Encouraging Economic Growth - Transportation Strategies for MPO's (225,000)
7. Maximizing Aggregate to Cement Ratio (275,000)

SIX-MONTH PLAN:The Department agreement with the Transportation Infrastructure Research Consortium (TIRC) has expired. The department initiated a Request for Proposals process Two proposals were received in response to the solicitation. An evaluation Committee composed of Department executive management was formed. The Committee's task is to review proposals and select a new Transportation Infrastructure Research Consortium.

Four new studies are in the planning stage (1) Severance Damage Studies to Commercial Properties ($50,000), (2) Evaluation of Best Practices to Control Storm Water Runnoff ($250,000), (3) Warrants and Guidelines for Portable Signals (250,000), (4) Improve Traffic Count-Based on VMT (250,000).

TITLE	CADD EXPERT SYS BLOWING SNOW CON
PIN	R02008881
Investigator	J. DOHERTY
Client	TRANS. MAINTENANCE
Contractor	TRANS. INFRASTRUCTURE CONSORT.

Date Project Initiated	8/27/97
Original Completion Date	9/30/99
Revised Completion Date	11/30/00
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	465000
Total Life	530000
FFY 1999	0
FFY 2000	0

Description Passive snow control involves improving safety and reducing winter maintenance costs by better fencing to control and containdevelopment of snowdrifts and prevention of drifting by redesign/reconstruction of lateral profiles and cross-sections of both pavements and shoulders. This study is an extension of previous work utilizing computer assisted design techniques.

TITLE	ITS BENEFITS AND COSTS
PIN	R02009881
Investigator	E. ROBERTS
Client	ITS GROUP, PLANNING
Contractor	TRANS. INFRASTRUCTURE CONSORT.

Date Project Initiated	3/27/98
Original Completion Date	5/30/98
Revised Completion Date	6/30/00
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	201200
Total Life	201200
FFY 1999	0
FFY 2000	0

Description Project examines New York State's existing ITS programs, evaluates comparable systems elsewhere, recommends specific future directions for New York's systems and evaluates project-level cost-benefits, tools and techniffques appropriate for New York State. Covers automated toll collection, response to traffic emergencies,variable message signs and remote information systems for traffic and weather.

TITLE	AUTOMATING NYSDOT DATA COLLECTION
PIN	R02010881
Investigator	B. JOHNSON
Client	SUPPORT SERVICES
Contractor	TRANS. INFRASTRUCTURE CONSORT.

Date Project Initiated	3/27/98
Original Completion Date	2/28/99
Revised Completion Date	11/30/00
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	123400
Total Life	123400
FFY 1999	0
FFY 2000	0

Description Integrates the technologies of GIS (Geographical Information Systems) and GPS (Global Positioning Systems) with conventional collection of field data. These new technologies will be examined for use with geographically referenced installations such as bridges, culverts, signs and signals for cost effectiveness, including links to digital photography.

TITLE	GEN'G,DIS'G,TRACK'G NYSDOT DOCS
PIN	R02011881
Investigator	M. DONOVAN
Client	SUPPORT SERVICES
Contractor	TRANS. INFRASTRUCTURE CONSORT.

Date Project Initiated	3/31/98
Original Completion Date	11/11/1911
Revised Completion Date	11/11/1911
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	100000
Total Life	
FFY 1999	0
FFY 2000	0

Description Project terminated. Nocosts incurred.

TITLE	MANAGING TORT LIABILITY
PIN	R02012881
Investigator	E. KERNESS
Client	LEGAL AFFAIRS
Contractor	TRANS. INFRASTRUCTURE CONSORT.

Date Project Initiated	6/4/98
Original Completion Date	8/31/99
Revised Completion Date	4/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	165000
Total Life	165000
FFY 1999	0
FFY 2000	0

Description Develops an information system to assist in resolving tort litigation resulting from lawsuits against NYSDOT. Includes identifying information to be collected, sources of that information and appropriate format and software compatible with existing legal affairs systems.

TITLE	PUB/PRIVATE PARTNERSHIPS TRANS NYS
PIN	R02013881
Investigator	J. PROCHERA
Client	RESOURCE & RISK MANGEMENT
Contractor	TRANS. INFRASTRUCTURE CONSORT.

Date Project Initiated	7/21/98
Original Completion Date	4/1/99
Revised Completion Date	4/1/99
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	48000
Total Life	
FFY 1999	
FFY 2000	

Description Project completed 04/01/99

TITLE	MAXIMIZING AGG-TO-CEMENT RATIO
PIN	R02014881
Investigator	J. O'CONNELL
Client	STRUCTURES DIVISION
Contractor	

Date Project Initiated	12/18/98
Original Completion Date	11/11/1911
Revised Completion Date	11/11/1911
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	580000
Total Life	
FFY 1999	0
FFY 2000	0

Description Project takes a new look at the chemistry and physics of the bonding of cement to sand and gravel in concrete, re-examining actual behavior and performance of concrete mixes through advanced measurement and testing.

TITLE	IMPROV. MPO TO ENCOURAGE ECO. DEV.
PIN	R02015881
Investigator	CARROLL/CUBRC
Client	PASS.7FREIGHT TRANS.
Contractor	

Date Project Initiated	11/11/11
Original Completion Date	11/11/11
Revised Completion Date	11/11/11
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	224854
Total Life	
FFY 1999	0
FFY 2000	0

Description Examines transportation impacts on economic development, defining roles and opportunities for selective transportation investments in promoting economic growth and activity.

TITLE	FINITE ELEMENT ANALYSIS OF FRP COM
PIN	R02018881
Investigator	O'CONNELL/ALAMPALLI
Client	STRUCTURES/TR&DB
Contractor	

Date Project Initiated	5/19/99
Original Completion Date	5/1/00
Revised Completion Date	5/1/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	50000
Total Life	
FFY 1999	0
FFY 2000	0

Description Finite element anallysis models of the first FRP bridge superstructure, and bridge deck built in New York State are to be developed and calibrated using available load test data to improve the understanding of these structures as built, document failure mechanisms associated with these structures and have models which can be used to load rate and refine design techniques for future structures.

TITLE	ECONOMIC IMPACTS OF TRANS. INVEST.
PIN	R02019881
Investigator	HOOLE/DRENNAN(CORNELL)
Client	OFFICE OF THE COMMISSIONER
Contractor	

Date Project Initiated	11/11/11
Original Completion Date	9/30/99
Revised Completion Date	9/30/99
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	0
Total Project	0	0

Programmed Expenditures

Original Budget	25000
Total Life	
FFY 1999	0
FFY 2000	0

Description Project completed, 9/99.

SECTION II

Experimental Program
Type A & B Continuing Studies

TITLE	DETER OF LONG TERM PERF CHEMI GROUT
PIN	R21701881
Investigator	DR. SANDHU
Client	MATERIALS
Contractor	

Date Project Initiated	8/27/91
Original Completion Date	5/31/94
Revised Completion Date	3/31/99
Revision number	5

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	47620
Total Project	0	47620

Programmed Expenditures

Original Budget	0
Total Life	70000
FFY 1999	5000
FFY 2000	0

Description

OBJECTIVE: To develop a greater understanding of long-term performance of different types of chemical grouts in concrete.

PROGRESS: Project closed due to the lack of staff Results summarized in a memo to project file.

SIX-MONTH PLAN:

TITLE	EVALUATION OF WINTER TRAF ACCIDENT
PIN	R22001881
Investigator	DR. SANDHU
Client	MAINTENANCE/TRAFFIC & SAFETY
Contractor	

Date Project Initiated	4/27/92
Original Completion Date	12/31/95
Revised Completion Date	12/31/99
Revision number	4

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	0	52469
Total Project	0	52469

Programmed Expenditures

Original Budget	106000
Total Life	106000
FFY 1999	10000
FFY 2000	0

Description

OBJECTIVE: To find out if winter severity has statistically significant impact on vehicle traffic accidents. If impact does exist, to quantify the relation between winter severity and snow related traffic accidents.

PROGRESS: Accident data has been received in GIS format.

SIX-MONTH PLAN: Project closed due to lack of staff.

TITLE	DEV OF OVERLAY DESIGN PROCE FOR NYS
PIN	R22401881
Investigator	DR. BENDAÑA
Client	MATERIALS/GEO. TECH
Contractor	

Date Project Initiated	12/2/93
Original Completion Date	9/30/96
Revised Completion Date	9/30/00
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	62847	366848
Total Project	62847	366848

Programmed Expenditures

Original Budget	106000
Total Life	500000
FFY 1999	80000
FFY 2000	80000

Description

OBJECTIVE: To develop an overlay design procedure suitable for NYS and acceptable to FHWA.

PROGRESS: Wrote a paper for Transportation Research Board annual meeting entitled "Urban PCC Pavements in New York"

SIX-MONTH PLAN: Continue working on updating the "Thickness Design Manual."

TITLE	HYDR-FRAC TEST APPAR & PROC DET AGG
PIN	R22501881
Investigator	R. LUND
Client	MATERIALS
Contractor	

Date Project Initiated	1/24/94
Original Completion Date	6/30/96
Revised Completion Date	12/31/99
Revision number	3

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	20674	93045
Total Project	20674	93045

Programmed Expenditures

Original Budget	200000
Total Life	200000
FFY 1999	35000
FFY 2000	10000

Description

OBJECTIVE: To develop a simplified test chamber. The SHRP device is cumbersome and would be difficult to assemble/disassemble as required for the test. To develop an automated test procedure, which will decrease the time and labor required to perform the SHRP test. To interpret results from the new test procedure and apparatus. To determine the relationships between the hydraulic-fracture test and aggregate performance. The expected speed of this procedure and a direct correlation of its results with other procedures would be a major improvement.

PROGRESS: Tess have been conducted and data analysis is in progress.

SIX-MONTH PLAN: Complete machine automation and conduct test and data analysis. Project has been extended due to allow for needed equipment modification.

TITLE	COMP MATLS HYWY BRIDGE CONST
PIN	R22701881
Investigator	T.ALBERSKI/DR.ALAMPALLI
Client	SD&C, GEB, MB, CONST, DESIGN, MAIN
Contractor	

Date Project Initiated	5/9/97
Original Completion Date	8/31/00
Revised Completion Date	8/31/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	24057	55998
Total Project	24057	55998

Programmed Expenditures

Original Budget	50000
Total Life	185000
FFY 1999	37000
FFY 2000	50000

Description

OBJECTIVE: 1) To investigate the feasibility of building an entire bridge, from foundation to appurtenance, using composite materials, and 2) Building a fully composite bridge and then monitoring its in-service performance.

PROGRESS: Study Proposal was published in May 1998 after peer review, in accordance with the Bureau's Policy & Procedure Manual. Established contact and cooperation with RPI Center for Composite Material Study. Literature search, bridge analysis, and material selection and design are in progress.

SIX-MONTH PLAN: Due to the change in state-of-the-art, project scope has changed. New scope will be defined and will be sent for client's review and comments.

TITLE	POST-TENSIONING EX STL BR MEMBERS
PIN	R22801881
Investigator	DR. HAG-ELSAFI/DR. ALAMPALLI
Client	STRUCTURES/HWY MAINT. DIV.
Contractor	

Date Project Initiated	7/8/97
Original Completion Date	8/31/00
Revised Completion Date	8/31/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	12	27374
Total Project	12	27374

Programmed Expenditures

Original Budget	250000
Total Life	250000
FFY 1999	20000
FFY 2000	10000

Description

OBJECTIVE: Improve understanding of post-tensioning as a retrofit technique. Develop general design and construction guidelines for strengthening existing steel bridge members by post-tensioning.

PROGRESS: Study Proposal completed. No other progress due to lack of resources.

SIX-MONTH PLAN: Nothing planned due to lack of personnel resources.

SECTION III

Proposed Projects Not Yet Initiated

New York State Department of Transportation
Transportation Research & Development Bureau

93-052 DEVELOPMENT OF IMPROVED PAVEMENT PERFORMANCE PREDICTION MODEL

PROBLEM: The Department's current pavement management system plan calls for the development of model to predict performance of both rehabilitation and maintenance treatments, given site specific variables such as soils, climate, and traffic. Volume II of the Rehabilitation Manual only gives average expected service lives under limited conditions for each treatment. Predicts service life is an important input to the life-cycle cost analysis, whose results will decide the selection o the preferred treatment for each projects. NYSDOT does not have any formal and comprehensive pavements performance prediction models that can meet this pavement management requirement. The AASHTO pavement performance model that NYSDOT recently adopted was only calibrated with very limited past performance and experience.

OBJECTIVE: Validate and calibrate the AASHTO performance model. Develop new models that can predicts the effect of each rehabilitation and maintenance treatment on safety, serviceability, and service life of a projects, by properly considering relevant variables including soils, climate, traffic drainage features, and existing pavements conditions.

BENEFITS: At the project level, designs can be effectively made to accomplish the goals of improving safety and serviceability with the prediction models. The life-cycle cost analysis can yield more accurate results and the most cost-effective treatment can be selected. At the network level, the long-term future needs estimating can be based on the predicted service lives of the treatments.

CLIENT: Technical Services Division
Facilities Design Division

New York State Department of Transportation
Transportation Research & Development Bureau

97-021 ELASTIC BEHAVIOR OF STEEL BRIDGES

PROBLEM: Load distribution to girders and forces on cross-frames are two issues related to the design of skewed steel bridges that have to been adequately addressed by AASHTO standard specifications (1). The effect of skew on dead-load and live-load distribution has been ignored by past specifications, and only the effect on live-load distribution has been included in the recent AASHTO LRFD specifications (2,3). However, more refined analysis of skewed bridges has shown that using LRFD specifications could result in significant error in estimating dead-load shear and reactions (4,5). Inaccurate estimation of these forces not only impacts girder design, but also bridge bearings and substructure design. Bearing and uplift problems during and after construction of skewed bridges are clear indications of inaccurate estimation of these reaction forces The presence of cross-frames on skewed steel bridges tends to increase their torsional rigidity, and subsequently introduces unintended forces cross-frame members and connections. These forces are sometimes of sufficient magnitude to cause damage to the cross-framer members and its connections to the girders.

OBJECTIVE: The objective of this project is two fold: 1) to investigate elastic behavior of skewed steel bridges to determine significance of skew for: a) dead-load and live-load distribution to girders, b) reaction forces and displacements at bridge bearings during and after construction, and c) forces on cross-frame members and cross-frame connections to the girders; and 2) to develop guidelines for design and construction of skewed bridges that consider these issues. Using these guidelines, engineers may identify situations where skew effect is significant and special analysis or construction methods are required, or when conventional methods could be used instead.

BENEFITS: Results from this project could significantly affect current design and construction procedures for skew steel-girder bridges. Monetary savings as a results of implementation of the findings of this project should be expected, because construction and maintenance-related problems will be eliminated or minimized.

CLIENT: Structures Division

SECTION IV

ADMINISTRATION/TRAINING

New York State Department of Transportation
Transportation Research and Development Bureau

10-01 ADMINISTRATION

A variety of recurring activities are required to administer the Bureau's research program. Charges are made on the basis of the particular service or function performed within the following categories:

Managerial Operations: The day-to-day activities which involve aspects of this Bureau's administration (e.g., inquiries, explanations, and justifications) which must be delegated, clarified, followed up, and finally resolved. These activities also deal with the broad general aspects of administration such as policy, procedures, balance, and funding of the research program. These tasks are performed exclusively by the Director and Section Heads. The level of effort varies among these individuals depending on their specific responsibilities and assignments.

Program Development: Efforts required to prepare and publish the Bureau's Federal Highway Planning and Research Work Program, and the submission of appropriate projects for consideration in the National Cooperative Highway Research Program (NCHRP), or to FHWA for consideration for administrative contract work, pooled-fund studies, or FHWA research are charged to this function.

Program Control: Activities under this function involve monitoring expenditures and work accomplished in relation to projected progress schedules and budgeted costs. It also concerns efforts directed toward ensuring that the research remains within the stated scope and objectives, and that marginal work or work which is no longer considered necessary by the requesting program manager is terminated.

STATUS:	**ESTIMATED 1999–00 COSTS:**	**CLIENTS:**
Continuing	$300,000	All Department Units

TITLE	ADMINISTRATION
PIN	R01001881
Investigator	ALL SECTIONS
Client	N/A
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	256879	256879
Total Project	256879	256879

Programmed Expenditures

Original Budget	300000
Total Life	ANNUAL
FFY 1999	330000
FFY 2000	300000

Description

10-02 ADMINISTRATION - Project Selection/Project Development

This project covers all activities necessary to develop the research program, including project solicitation, project evaluation, and program approval.

STATUS:	ESTIMATED 1999–00 COSTS:	CLIENTS:
Continuing	$50,000	All Department Units

TITLE	ADMINISTRATION-PROJ SEL/PROG DEV
PIN	R01002881
Investigator	ELRAHMAN
Client	ALL BIREAU SECTIONS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	4488	4488
Total Project	4488	4488

Programmed Expenditures

Original Budget	75000
Total Life	ANNUAL
FFY 1999	75000
FFY 2000	50000

Description

10-03 ADMINISTRATION - UTRC

This project covers all activities needed to manage the UTRC agreement, including administration of the umbrella agreement and selection and management of individual projects.

STATUS:	ESTIMATED 1999–00 COSTS:	CLIENTS:
Continuing	$25,000	All Department Units

TITLE	ADMINISTRATION - UTRC
PIN	R01003881
Investigator	ELRAHMAN
Client	ALL NYSDOT UNITS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	19247	19247
Total Project	19247	19247

Programmed Expenditures

Original Budget	25000
Total Life	ANNUAL
FFY 1999	25000
FFY 2000	25000

Description

10-04 ADMINISTRATION - Consortium / Contract Research

This project covers all activities needed to manage the consortium for contract research, including administration of the umbrella agreement and selection of management of individual assignments.

STATUS:	ESTIMATED 1999–00 COSTS:	CLIENTS:
Continuing	$125,000	All Department Units

TITLE	ADMIN - CONSORTIUM/CONTRACT RES
PIN	R01004881
Investigator	ELRAHMAN
Client	ALL NYSDOT UNITS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	65868	65868
Total Project	65868	65868

Programmed Expenditures

Original Budget	125000
Total Life	ANNUAL
FFY 1999	125000
FFY 2000	125000

Description

16-0 TRAINING

Activities conducted under this project are directed at providing continuing education and specialized instruction necessary for the completion of federal-aid projects. In this program period:

1. Wes Yang successfully coordinated and hosted FHWA Demonstration Workshop #115 on Life Cycle Cost Analysis on September 9 and 10, 1998 in Albany, NY. A total of 35 participants from the Main Office, Regional Office, Thruway, and Cornell University attended the workshop. Life-cycle-cost analysis technique, user cost, and probabilistic approach were discussed in the workshop. The workshop was well conducted by FHWA and was well received by all participants.

2. Bob Valenti attended the 5th Statewide Conference on Local Bridges held in Syracuse on October 28 - 29, 1999 as part of his steering committee and training subcommittee responsibilities.

3. On November 20, 1998 Bob Valenti conducted an afternoon seminar for graduate students at the University of South Florida on the topic of current funding levels for transportation research programs. He did this at the request of Dr. Jian Lu, a Civil Engineering Professor at USF and former researcher in TR&DB.

4. Cheng Chou attended a four-day NHI training course on "Techniques for Pavement Rehabilitation" on November 3-7, 1998 in Region 8 (Poughkeepsie).

5. Sreenivas Alampalli discussed developing a course on bridge design using advanced composites with FHWA, who agreed to contribute up to $2000 to cover course expenses. RPI, Union College, and Foster Miller, Inc. expressed their interest in developing the course. Sreenivas will discuss this matter with the Structures Division. Course attendance will be open to Department and FHWA engineers, as well as representatives from New England states.

6. On June 2, 1999 Bob Valenti attended the Excellence at Work Conference sponsored by the Empire State Advantage Program.

7. Jonathan Kunin and Sreenivas Alampalli are coordinated a Composite Workshop August 23, 24, and 25, 1999. The classes and laboratory sessions were held at Union College. The syllabus and invitations to the course went to FHWA, Materials, Structures, Geotechnical Engineering, and the Regional Structure Engineer. Ryan Lund, Cheng Chou, Jonathan Kunin, Sreenivas Alampalli and Tadeusz Alberski from TR&DB attended the Composite Materials Workshop. Frank Owens and Osman Hag-Elsafi attended the FRP column wrapping demonstration.

8. Frank Owens organized and attended a July 26, 1999 presentation by HDR Engineering on structural uses for reactive powder concrete and possible demonstration projects. Sreenivas Alampalli and Jonathan Kunin also attended the meeting. A follow-up meeting to discuss NYSDOT interest in the material and funding mechanisms for a demonstration project has been scheduled. Tim Conway from Region 1, John Formosa from FHWA, Joe Savoie from Structures, Jonathan Kunin, Sreenivas Alampalli and Frank Owens from TR&DB attended the meeting.

STATUS:	ESTIMATED 1999–00 COSTS:	CLIENTS:
Continuing	$25,000	All Department Units

TITLE	TRAINING
PIN	R01600881
Investigator	ALL SECTIONS
Client	VARIOUS
Contractor	

Date Project Initiated	10/1/99
Original Completion Date	9/30/00
Revised Completion Date	9/30/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	36849	36849
Total Project	36849	36849

Programmed Expenditures

Original Budget	25000
Total Life	ANNUAL
FFY 1999	50000
FFY 2000	25000

Description

SECTION V

COMPLETED PROJECTS

PUBLICATIONS

OCTOBER 1, 1998 - SEPTEMBER 30, 1999

SPECIAL REPORTS

•	SR 130	In-Service Performance of HP Concrete Bridge Decks	2/99
•	SR 131	A Simplified Design Procedure for End-Plates and Base-Plates of Cantilevered Traffic Structures	6/99
•	SR 132	Integral Abutment Bridges: Current Practice in the United States and Canada	6/99

CLIENT REPORTS

•	CR 81	Granite and Concrete Curbing: A Comparison of Performance and Costs	9/98
•	CR 82	Preventive Measures and Remedial Activities Associated with the 1997 Early-Distress Survey	2/99
•	CR 83	Fiberglass-Fabric-Reinforced Interlayers for Flexible Overlays	4/99
•	CR 84	Repair of Aluminum Bridges on Long Island	6/99

NEWSLETTERS

- Transportation R&D News: Nos. 76, 77, 78
- TNT: Technology News Transfer: Vol. 10, Nos. 1, 2, and 3

TRANSPORTATION RESEARCH BOARD PAPERS

The following papers were submitted to the Transportation Research Board in 1999:

- Cost Effective Rehabilitation of Two Aluminum Bridges in Long Island, New York
- Urban PCC Pavements in New York

OTHER PUBLICATIONS

•		Implementing SHRP Products in New York: Fifth Progress Report	10/98

SECTION VI

100% STATE FUNDED PROJECTS

TITLE	ADMINISTRATION STATE FUND EFFORTS
PIN	R01001801
Investigator	ALL SECTIONS
Client	N/A
Contractor	

Date Project Initiated	10/1/97
Original Completion Date	9/30/98
Revised Completion Date	9/30/98
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	35288	35288
Total Project	35288	35288

Programmed Expenditures

Original Budget	50000
Total Life	ANNUAL
FFY 1999	90000
FFY 2000	50000

Description

TITLE	UTRC - CURING
PIN	R01239801
Investigator	CHOU
Client	STRUCTURES/MATERIALS
Contractor	RPI

Date Project Initiated	1/20/93
Original Completion Date	9/30/97
Revised Completion Date	9/30/99
Revision number	1

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	28027	150800
Total Project	28027	150800

Programmed Expenditures

Original Budget	10000
Total Life	15000
FFY 1999	5000
FFY 2000	0

Description

OBJECTIVE: To perdict the temperature and water fraction profiles that exist during the first 72 hours of curing in concrete pavements and bridge decks using conventional (Class H) concrete or high performance (Class HP) concrete, and to determine under what conditions concrete can be successfully placed.

PROGRESS:(1) Conducted a field experiment on RT. 30 Bridge in Montgomery Co. for verifying 2-dimension model applied to HP concrete bridge deck, (2) completed a series of Experiments for determining the cement hydration rate and heat generation rate of HP concrete during curing, (3) completed final report.

SIX MONTH PLAN : Project completed

TITLE	COMP MATLS HYWAY BRIDGE CONST
PIN	R22701801
Investigator	T.ALBERSKI/DR.ALAMPALLI
Client	SD&C,GEB,MB, CONST,DESIGN, MAIN
Contractor	

Date Project Initiated	5/9/97
Original Completion Date	8/31/00
Revised Completion Date	8/31/00
Revision number	0

Actual Expenditures

	Year to Date	*Life to Date*
Regular Salary	8727	29691
Total Project	8727	29691

Programmed Expenditures

Original Budget	124000
Total Life	185000
FFY 1999	
FFY 2000	

Description Project closed. Activities assumed under R22701881

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LRI